REMARKS/ARGUMENTS

By this Amendment,, Claim 21 is amended and claims 28 and 29 are added. Claims 21-25 and 27-29 are pending.

The Examiner sets forth that Claims 21-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Paasonen et al. (US Patent 5,601,920) in view of either one of Watanabe (US Patent 4,368,568) or Fukuyama and either one of Brookstein or Paul, Jr. for the same reasons as expressed in paper no. 8, paragraph 4.

With regard to the requirement of "low viscosity resin" for the impregnating resin, the Examiner believes that the references all suggested the use of epoxy resins in the resin infusion operation, see Paasonen et al. '920 at column 6, lines 14-16, Brookstein at column 4, lines 27-32 and Paul at column 4, lines 51-66. Clearly, one skilled in the art would have known to select a suitable "low" viscosity material for the resin in the infusion operation according to the Examiner. The Examiner sets forth that the references to Watanabe (US Patent 4,368,568) or Fukuyama suggested the application of continuous windings as the reinforcing layers to the rolls and provided reasons (increased compressive strength) as to why one would have utilized the same. Applicant is referred to paper no 8, paragraphs 3 and 4 for a more complete discussion of these references.

The Examiner sets forth that Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over the references as set forth above in paragraph 2 further taken with either one of McGaughey et al. or Francis for the same reasons as expressed in paper nol. 8, paragraph 5.

The Examiner sets forth that Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over the references as set forth above in paragraph 2 further taken with McLain et al. (newly cited).

The Examiner believes that while the references to Watanabe '568 or Fukuyama suggested that those skilled in the art would have utilized would unidirectional layers wherein the fibers were would to be closely packed in their arrangements, the references failed to teach that those skilled in the art at the time the invention was made would have incorporated both hopp (circumferential windings which were perpendicular to the axis of the shaft) as well as longitudinal windings (which were parallel to the axis of the shaft) in the same assembly. It should be noted that the reference to Watanabe '568 suggested that those skilled in the art would have employed on woven layers in the reinforcement (which were known per se to have randomly oriented fibers therein) according to the Examiner. The Examiner believes that the reference failed to teach that those skilled in the art would have incorporated longitudinally disposed fibers in the arrangement (i.e. fibers oriented along the longitudinal axis of the assembly). However, the Examiner believes that those skilled in the art of filament winding and more particular of filament winding to reinforce a product, would have understood that the use of plural layers wherein the orientation of the fibers from one layer to the next varied was within the skill level of those in the art of reinforcing via filament winding (and more particularly, one skilled in the art would have understood what type of reinforcement to provide for the end products dependent upon the angle of the reinforcement to provide the requisite strength in the finished wound assembly) as suggested by McLain.

The Examiner believes that McLain suggested that to provide the desired reinforcement in a finished wound assembly one skilled in the art would have provided layers which were separate layers and which were a combination of hoop windings, longitudinal windings, and helical windings, see column 6, lines 13-26, for the hoop windings, column 6, lines 54-68 for the longitudinal windings, and column 6, lines 43-53 for the arrangement of helical windings. Clearly one skilled in the art would have understood to provide different wound layers at different angels in order to impart the desired strength to the finished assembly (as required by the customer) where on filament wound to form a roll cover material according to the Examiner. Note that one skilled in the art would have understood that various combinations of layers would have been available with none but the expected benefits associated with the angle of reinforcement applied according to the Examiner. The Examiner further believes that it would have been obvious to one of ordinary skill in the art to apply multiple layers of reinforcement wherein the layers would have been provided to provide the desired degree of reinforcement needed in the finished assembly as suggested by McLain in the process of making a covered roll wherein various layers of reinforcement were used to make the assembly as taught by the references as set forth above in paragraph 2.

The Examiner sets forth that Claims 1-20 and 26 have been withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention (Claims 1-20) ans species (Claims 26), there being no allowable generic or linking claim. Election was made without transverse traverse in Paper No. 7 according to the Examiner.

The Examiner sets forth that Applicant's arguments with respect to Claims 21-25 and 27 have been considered but are moot in view of the new ground(s) of rejection.

The Applicant argues that the reference to Paasonen, et al. failed to teach the use of a packed unidirectional reinforcing layer which was wound for formation of the cover material for the roll according to the Examiner. While it is correct that Paasonen, et al. employed a different layer of material for the reinforcement in the roll disclosed therein according to the Examiner, the Examiner believes that the reference to either Watanabe '568 or Fukuyama suggested that those skilled in the art at the time the invention was made would have known to employ continuous windings which were disposed helically and/or circumferentially (hoop) abut the core in order to improve the compressive strength of the roller assembly.

The Examiner believes that clearly, one skilled in the art at the time the invention was made would have understood to apply the reinforcement about the roll in tightly packed arrangement and followed the same with impregnation to form a reinforcing layer in a roll. It should be noted that neither one of Watanabe '568 or Fukuyama suggested vacuum impregnation according to the Examiner to provide for the resin in the reinforced layer, however, impregnation after the application of a dry reinforcement was known in the art as envisioned by Paasonen, et al. the Applicant is advised that the use of vacuum to assist in the infiltration of the resin was known per se as suggested by Brookstein or Paul, Jr. as previously discussed in paper no. 8. The Applicant is advised by the Examiner that one cannot show non-obviousness by attacking references individually where rejections are based on combination of references under 35 USC 103, see In re Keller, 208 USPQ

871. The Applicant is advised that according to the Examiner there was ample motivation to employ a varied reinforcement including a wound layer of closely packed fibers about the core as such would have provided for increases in the compressive strength of the finished assembly.

Regarding new Claim 27, the Applicant is advised that those skilled in the art of winding would have known how to alter the layers to provide a finished assembly with the requisite strength as function of the orientation of the filaments in the winding operation and would have known to provide various layers including circumferentially disposed filaments as well as longitudinally disposed filaments within separate sublayers according to the Examiner. The Examiner believes that the reference to Watanabe '568 suggested that those skilled in the art at the time the invention was made would have incorporated nonwoven layers within the reinforcing assembly (such nonwoven layers were known to have randomly disposed filaments therein as such is a function of a nonwoven fabric and how the same is manufactured). The Applicant is advised that according to the Examiner one skilled in the art would have known to modify the references to attain the desired strength in the finished assembly as a function of the demands of the customer and the intended use of the roller and such is nothing more that the common sense application of known filament winding techniques in the manufacture of a roller, In re Bozek, 163 USPQ 545.

The Examiner believes that the Applicant did not address the references other than Paasonen in the response and it is therefore believed that Applicant agrees with the Office interpretation of these references. The Applicant is advised by the Examiner that in the Examiner's opinion the use of continuous tightly packed filaments disposed at least in the hoop or circumferential direction was

known per se and that the impregnation of such a reinforcing layer via vacuum infusion was additionally commonplace in the roller manufacture art. According to the Examiner there is no unexpected benefit the Examiner believes that the orientation of the layers at various angles within the sublayers to attain a specific reinforcement benefit would have been expected) provided by Applicant's claimed operation.

The Applicant's amended Claim 21 sets forth a method for producing a covered roll, the covered roll having a multi-layered construction, including the steps of providing a roll core base, the roll core base having two ends, an axial length therebetween and an outer surface. The method of Claim 21 further recites providing a dry under-layer formed of densely packed fibers and tightly wrapping the under-layer circumferentially around the role core base. Applying a covering layer over the dry under-layer to provide an annular axially extending resin infusion channel between the outer surface and the covering layer, the resin infusion channel being filled with the densely packed fibers of the dry under-layer is also set forth. Openings are provided through the covering layer in the vicinity of each of each of the ends of the roll core base, the openings extending to the resin infusion channel. A low-viscosity thermoset resin is applied with vacuum to the openings to cause the resin applied to the openings in the vicinity of the ends of the roll core base to infuse into the densely packed fibers over substantially the entire length of the roll core base and to intimately bind with the densely packed fibers of the under-layer within the resin infusion channel.

New Claim 28 sets forth a method for producing a covered roll, the covered roll having a multi-layered construction, the method including the steps of providing a roll core base, the roll core

base having two ends, an axial length therebetween, a central region and an outer surface, as well as providing a dry under-layer formed of densely packed fibers. The under-layer is tightly wrapped circumferentially around to roll core base and a covering layer is applied over the under-layer to provide an annular axially extending resin infusion channel between said outer surface and said covering layer, said resin infusing channel being filled with the densely packed fibers of the dry under-layer. Openings are provided through the covering layer in the vicinity of each of the ends of the roll core base, the openings extending radially inward to the under-layer. A low viscosity thermoset resin is applied to the openings with vacuum to infuse the resin into the dry under-layer, said infusion proceeding from the ends of the roll core base to the central region to cause the resin to intimately bind with the densely packed fibers of the dry under-layer whereby the infusion occurs in an axial direction over substantially the entire axial length between the two ends of the roll core base.

New Claim 29 sets forth a method for producing a covered roll, the covered roll having a multi-layered construction, the method including the steps of providing a roll core base, the roll core base having two ends, an axial length therebetween, a central region and an outer surface. A dry under-layer formed of densely packed fibers is provided, the dry under-layer informed of a plurality of sublayers, at least one sublayer of the plurality of sub plurality having randomly oriented fibers and at least one sublayer of the plurality of sublayers having substantially continuous unit directional fibers. The under-layer is tightly wrapped circumferentially around the roll core base and a covering layer is applied over the dry under-layer to provide an annular axially extending resin infusion

channel between said outer surface and said covering layer, the resin infusing channel being filled with the densely packed fibers of the dry under-layer. Openings are provided through the covering layer in the vicinity of each of the ends of the roll core base, the openings extending radially inward to the under-layer. A low viscosity thermoset resin is applied to the openings with vacuum to infuse the resin to the dry under-layer, the infusing proceeding from the ends of the roll core base to the central region to the infusion occurs in axial direction over substantially the entire axial length between the two ends of the roll core base.

Paasonen does not teach or suggest providing an annular axially extending resin infusion channel filled with densely packed fibers of the dry under-layer, providing openings through a covering layer in the vicinity of the ends of the roll core base, and applying low viscosity resin with vacuum to the openings to cause the resin applied to the openings in the vicinity of the ends of the roll core base to infuse into the densely packed fibers over substantially the entire length of the roll core base and to bind with the densely packed fibers as set forth in amended Claim 21.

Nor does Paasonen teach or suggest a roll core base having two ends, a central region, providing openings through a covering layer in the vicinity of the ends, and applying a low viscosity resin to the openings with vacuum to infuse the resin into the dry under-layer, the infusing proceeding from the ends of the roll core base to the central region to cause the resin to intimately bind with the densely packed fibers whereby the infusing occurs in an axial direction over substantially the entire axial length between the two ends of the roll core base, as set forth in new Claim 28.

Additionally, Paasonen does not teach or suggest a roll core base having two ends with a central region, and providing an annular axially extending resin infusion channel between said outer surface and said covering layer, the resin infusion channel being filling the channel with densely packed fibers of differing orientations, applying a low viscosity resin to openings at the ends thereof to infuse resin, the infusing proceeding from the ends of the role core base to the central region to cause the resin to intimately bind with the densely packed fibers of the dry under-layer, whereby the infusion occurs in an axial direction over substantially the entire length between the two ends as required new Claim 29.

Among other features, Paasonen lacks a teaching of applying the resin to openings in the vicinity of the ends, and infusing from the ends of the roll base cover towards a central region, and a teaching that the infusion channel be filled with densely packed fibers..

The Examiner has provided numerous references to supply features missing from Paasonen. For example, the Examiner cites Brookstein and Paul as teaching the infiltration of resin in dry fibers and the use of a vacuum. However, the combination of Paasonen with either Brookstein or Paul would still lack a teaching of the use of the vacuum to cause the resin to infuse from the ends to a central region, or a teaching to cause resin applied to openings in the vicinity of the ends of the roll core base to infuse over substantially the entire length of the roll core base.

Likewise, the Examiner has cited Watanabe and Fukuyama as teaching a method of winding a fiber layer within the intermediate layer of the roll. However, a combination of Paasonen with either Watanabe or Fukuyama would still lack the combination of features set forth in the

Applicant's Claims 21, 28 and 29. Furthermore, the Applicant does not believe that there is any adequate suggestion within the references to justify combining the references in a way that could suggest the Applicant's invention.

With respect to McLean, the Examiner points out that there is a teaching of using fibers of differing orientations therein. The Applicant respectfully points out that McLean does not teach densely packing the fibers of differing orientations as required in new Claim 29.

Favorable reconsideration is respectfully requested in view of the foregoing amendments and the following remarks.

The Examiner's courtesy in granting an interview to Applicant's' representative on November 5, 2003 is gratefully acknowledged.

For at least the reasons set forth above, it is respectfully submitted that the above-identified application is in condition for allowance. Favorable reconsideration and prompt allowance of the claims are respectfully requested.

Should the Examiner believe that anything further is desirable in order to place the application in even better condition for allowance, the Examiner is invited to contact Applicant's' undersigned attorney at the telephone number listed below.

Respectfully submitted,

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Please charge or credit our Account No. 03-0075 as necessary to effect entry and/or ensure consideration of this submission.